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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/534,415

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EXAMINER

RICE, ELISA M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,415	Applicant(s) LU ET AL.	
	Examiner ELISA M. RICE	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 9 and 11-15 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/8/2005, 8/4/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claim 6 fails to define Gsub1 until claim 7.

Appropriate correction is required. Claim 9 fails to define Wsubn. Examiner assumes the Applicant means the weightings associated with their respective extracted feature.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 15 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 15 defines a computer program element embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1-5, 8, 9, 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lidbetter et al (WO 99/21173).

Regarding claim 1, 13, 14, and 15, Lidbetter discloses a method for generating a quality oriented significance map for assessing the quality of an image or video, comprising the following steps:

extracting features of the image or video (Lidbetter, page 6, lines 26-27);

determining a perceptual quality requirement of at least one extracted feature (Lidbetter, page 12, 24-30; Lidbetter, page 8, lines 32-34; Lidbetter, page 6, lines 15-16; Lidbetter) ; and

integrating the extracted features and the perceptual quality requirement of the at least one extracted feature to form an array of significance level values, thereby generating the quality oriented significance map (Lidbetter, page 13, line 31, "perceptual layer model 40"; Lidbetter, page 6, lines 9-11; Lidbetter, page 12, 32-34; Lidbetter, page 14, lines 21-27).

Regarding claim 2, Lidbetter discloses the method according to claim 1, wherein the features of the image or video are extracted using visual feature- based information (Lidbetter, page 6, lines 9-11) and knowledge-based information (Lidbetter, page 6, lines 13-17, Lidbetter, page 7; Lidbetter, line 4-6).

Regarding claim 3, Lidbetter discloses the method according to claim 2, wherein an absolute motion and a relative motion are determined, and are used to determine a quality level value of the pixel or region of the image or video, wherein the determined quality level value is a perceptual quality requirement used for generating the quality oriented significance map (Lidbetter, page 7, lines 30-32, Lidbetter, page 13, lines 2-3, Lidbetter, page 4, lines 17-19; Lidbetter, page 13, lines 10-12).

Regarding claim 4, Lidbetter discloses the method according to claim 2, wherein the extracted features and the perceptual quality requirement of the at least one extracted feature are integrated to form the array of significance level values using a non-linear

mapping function (Lidbetter, page 5, lines 30-34, inherent that the mapping functions employs nonlinear activity dependent coupling functions to integrate elements because non-linear functions are more general than linear coupling.)

Regarding claim 5, Lidbetter discloses the method according to claim 4, wherein coupling effects as a result of the integration of the extracted features (Lidbetter, "video error descriptors", page 13, line 21) are used when forming the array of the significance level values (Lidbetter, "In the system depicted there are both audio and visual stimuli 11, 21 and there are .therefore a number of cross-modal effects which can affect the perceived quality of the signal.", page 13, lines 6-10; Lidbetter, "cross-modal combining function", page 13, line 26).

Regarding claim 8, Lidbetter discloses the method according to claim 4, wherein the integration of the extracted features is performed by determining a weight to each of the extracted features, adding the weighted extracted features (Lidbetter, page 12, 24-30; Lidbetter, page 8, lines 32-34; Lidbetter, page 6, lines 15-16; Lidbetter), and applying the nonlinear mapping function to the accumulated features (Lidbetter, page 13, lines 26-30), thereby forming the array of the visual significance level values (Lidbetter, page 13, line 31, "perceptual layer model 40"; Lidbetter, page 6, line Lidbetter, page 12, 32-34; Lidbetter, page 14, lines 21-27).

Regarding claim 9, Lidbetter discloses the method according to claim 8, wherein the quality oriented significance map is obtained using the following equation (Lidbetter, page 13, line 20-30; Lidbetter, page 13, lines 2-3; Lidbetter, page 15, lines 20-22).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lidbetter et al (WO 99/21173) in view of Osberger (US 2002/0126891).

Regarding claim 11, Lidbetter discloses the method according to claim 1, but does not disclose the generated quality oriented significance map is further processed in a post processing step to enhance the quality of the generated quality oriented significance map.

Osberger teaches performing a post processing step to enhance the quality of the generated quality oriented significance map (Osberger, paragraph 79).

It would have been obvious to one of ordinary skill in the art to modify the invention of Lidbetter to include the postprocessing step of Osberger in order to “remove spurious regions of high importance” (Osberger, paragraph 79).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lidbetter et al (WO 99/21173) and Osberger (US 2002/0126891) as applied to claim 11, and further in view of Satou et al. (US 6,243,419 B1).

Regarding claim 12, the combination of Lidbetter and Osberger discloses the method according to claim 11, but does not disclose wherein the post processing step is performed using a Gaussian smoothing technique.

Satou teaches wherein the post processing step is performed using a Gaussian smoothing technique (Satou, column 16, lines 45-49).

It would have been obvious to one of ordinary skill in the art to modify the invention of the combination of Lidbetter and Osberger to include the Gaussian smoothing step of Satou “so that the smaller value portions become less likely to be selected while the contiguous larger value portions are merged together” (Satou, column 16, lines 45-49).

Allowable Subject Matter

Claims 6, 7, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims AND corrections are made to overcome the 112 rejection, which has been advanced for claim 6 and 9.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELISA M. RICE whose telephone number is (571)270-1582. The examiner can normally be reached on 12:00-8:30p.m. EST Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571)272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elisa M Rice/
Examiner, Art Unit 2624

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624